

# Indicators of Environmental Quality

January 2001



Hawai`i Department of Health

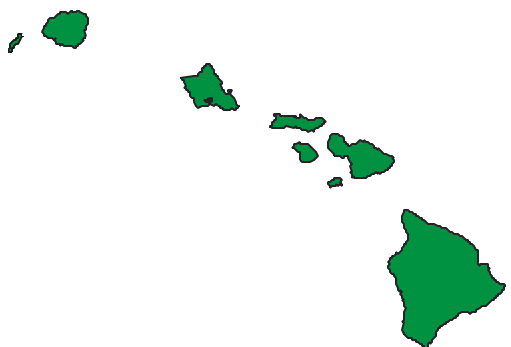


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# DOCUMENT NOTES

This report includes a selection of 21 environmental indicators, each occupying a single page. Each indicator page shows a data set, a chart based on those data, and a discussion of the indicator and the data upon which it is based. Only data collected by, through or about Hawai'i Department of Health programs are included.

The discussion accompanying each indicator is separated into five sections:

- ◆ *Explanation:* The first section explains the data and chart, focusing on the fundamental picture portrayed by the chart. Terms and caveats are also discussed in this section.

- ◆ *Implications:* An 'Implications' section follows, with a short and sometimes subjective discussion of what impact the indicator findings may have on public health and the environment, and therefore on HDOH's environmental programs.

- ◆ *Data Quality:* The third section provides a one-word assessment of data quality for the indicator. Data quality is ranked as either High ( $\pm 5$ -10% confidence), Medium ( $\pm 10$ -25% confidence, or Low ( $\pm 25$ -50% confidence).

- ◆ The last two discussion sections note the *Source* of the data and comment on whether the *Data* are required of HDOH by the EPA.

In most cases, when a percentage scale is used in a chart the scale ranges from 0 to 100 percent. To more clearly show trends, some chart scales extend from values of 50% or 75% to 100%.

Data used are organized on a federal fiscal year (FFY) calendar (unless otherwise noted), and usually cover the years 1994-1999 in order to show a five-year trend for each indicator. Some indicators do not have data available for that period, and some provide only 'snap shot' of information for a single year.

**Environmental Indicator:** a tool which uses best available data to measure the quality of the environment and/or progress made in protecting the environment.

The term "no data" is listed in spreadsheets to indicate missing data. Those data were not made available in time to be included in this report. In one instance the data may not exist.

## Acronyms

EPA	-U. S. Environmental Protection Agency
EPO	-Environmental Planning Office
CAB	-Clean Air Branch
CWB	-Clean Water Branch
HDOH	-Hawai'i Department of Health
NRIAQB	-Noise, Radiation & Indoor Air Quality Branch
OSWM	-Office of Solid Waste Management
SDWB	-Safe Drinking Water Branch
SHWB	-Solid & Hazardous Waste Branch
WWB	-Wastewater Branch

# Multi-Program Indicators

## Toxics Release Inventory into Hawai'i's Air, Water and Land

### Explanation:

Overall releases of toxic compounds into Hawai'i's air, water and land are declining. Releases to water and injection wells, and off-site

transfers, have been dramatically reduced. While air emissions have not decreased significantly, Hawai'i has very clean air.

**Implications:** The declining trend in toxic releases is positive as air, water and land are all environmentally connected. Further declines in legal releases would be beneficial, however they are not expected.

### Toxics Release Data (in pounds)

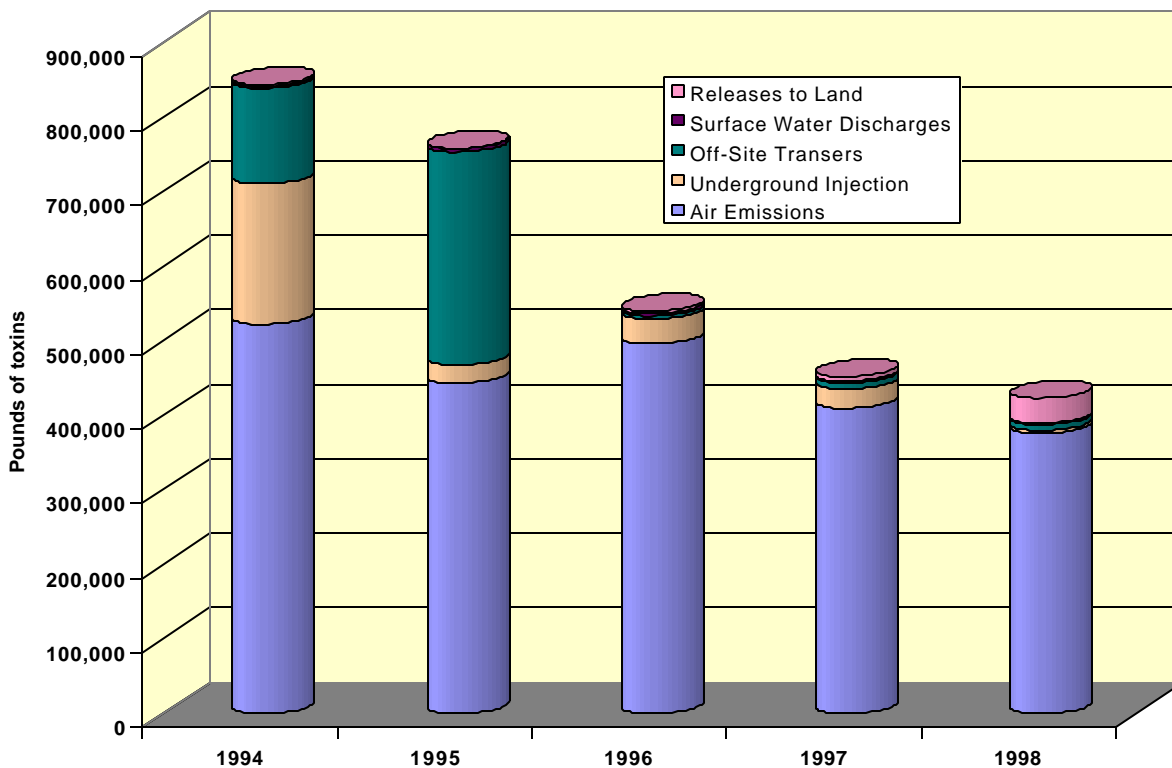
FFY	Air Emissions	Surface Water Discharges	Underground Injection	Releases to Land	Off-Site Transfers
1994	522,810	2,300	188,210	2,505	128,557
1995	443,607	4,510	24,306	545	285,905
1996	496,508	3,265	33,209	3,290	3,995
1997	409,983	2,119	25,750	6,188	8,365
1998	376,116	2,057	3,849	33,634	7,768

**Data Quality:** Medium ( $\pm 10\text{-}25\%$  confidence).

**Source:** EPA's Toxics Release Inventory (available on EPA's web site).

Data are not required of HDOH by the EPA, but the EPA does require these data from private industries.

Toxic Releases in Hawai'i (in pounds)



## Status of Chemical Contamination in Hawai`i's Groundwater Well Sources as of 1998

**Explanation:** Testing conducted on many of Hawai`i's groundwater 'well sources' (i.e., individual wells or groups of wells in one location) indicate that 66% of the well sources are without any detectable chemical contamination. Thirty-four percent of the wells tested showed contamination, with 8% of the total wells deemed unsafe to use without treatment (i.e., contaminate levels exceed maximum contaminant levels or MCLs). MCLs as used here include a chemical exceedance of a health-based concentration ceiling or a lifetime health advisory (LHA).

increase due to historical applications of pesticides and releases of other chemicals, as previous contaminants may still be percolating down to the groundwater table. As a result, HDOH will not be able to improve the condition of Hawai`i's groundwater aquifers in the short-term. However, HDOH is helping to prevent future contamination through its various pollution control and remediation programs.

Groundwater Well Source Contamination Data

Well Sources Showing No Contamination	Contaminated Well Sources		Total Well Sources
	Contamination Exceeds MCLs	Contamination Detected Below MCLs	
185	23	73	281

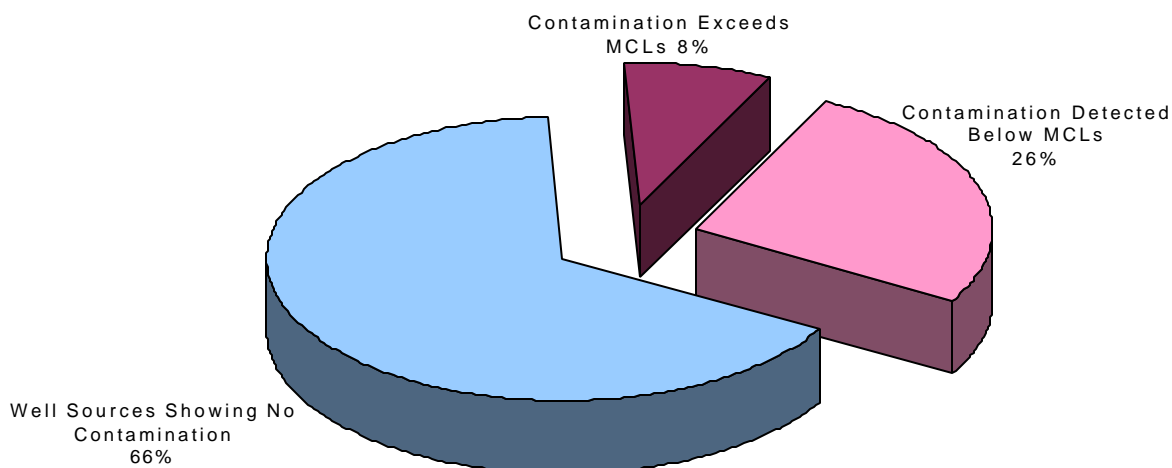
**Implications:** An extrapolation of this data to the entire state would predict that slightly over a third of Hawai`i's aquifers are contaminated with chemicals other than nitrates, with water in an eighth of the state's aquifers no longer potable without treatment. In the short term, contamination is likely to

**Data Quality:** Medium ( $\pm 10$ -25% confidence).

**Source:** HDOH's 1998 Groundwater Contamination Maps.

Data are not required by the EPA.

Status of Chemical Contamination in Hawai`i's Groundwater Well Sources, 1998  
(excludes nitrates)





# Clean Air Branch Indicators

## Ambient Levels of Sulfur Dioxide Compared to National Standards

**Explanation:** The national standard for sulfur dioxide (SO<sub>2</sub>) concentrations was set by EPA at 80-micrograms/cubic meter (µg/m<sup>3</sup>) as the annual average limit of SO<sub>2</sub> in ambient air. The Honolulu air monitoring station is located atop the HDOH building downtown. Data from this station are shown here as representative of SO<sub>2</sub> concentrations in Hawai'i. The results show that the annual average over the past five years, 2-3 µg/m<sup>3</sup>, has been roughly 97% below the standard.

**Implications:** Hawai'i's annual average SO<sub>2</sub> concentrations are very low compared to the national standard. On persistent Kona wind days, the volcanic emissions can be transported to Oahu and are experienced mostly as sulfates

(SO<sub>4</sub>). These sulfates are included in the PM<sub>10</sub> (particulate) category expressed on the next page.

### Sulfur Dioxide Indicator Data

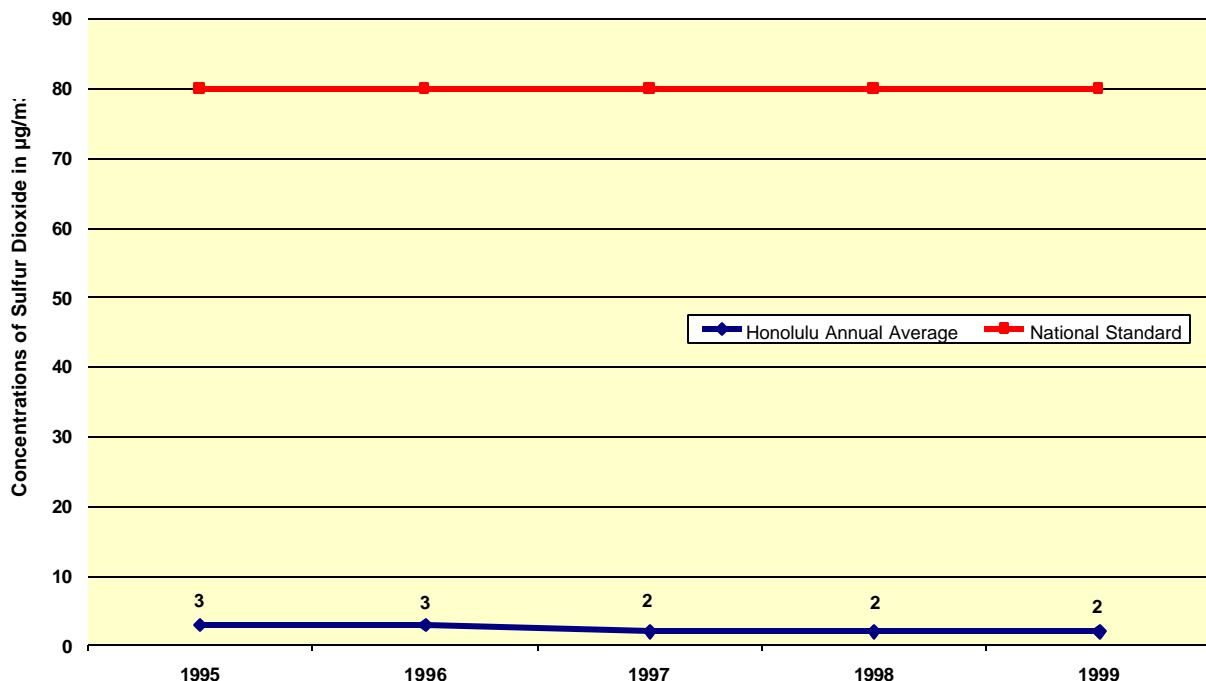
FFY	Honolulu Annual Average of SO <sub>2</sub> (µg/m <sup>3</sup> )	National Standard for SO <sub>2</sub> (µg/m <sup>3</sup> )
1995	3	80
1996	3	80
1997	2	80
1998	2	80
1999	2	80

**Data Quality:** High (±5-10% confidence).

**Source:** HDOH Clean Air Branch.

Data are required by the EPA.

**Hawai'i's Annual Average Sulfur Dioxide Levels  
(Honolulu Station) Compared to the National Standard**



## Ambient Levels of Air-borne Particulates Compared to National Standards

**Explanation:** The EPA has set the annual average of the particulate matter, or PM<sub>10</sub>, at 50 micrograms/cubic meter ( $\mu\text{g}/\text{m}^3$ ). PM<sub>10</sub> is defined as particles with an aerodynamic diameter less than or equal to 10 microns. At the Honolulu monitoring station, located in the heart of downtown, the annual average concentration of particulates varied from 8 to 14  $\mu\text{g}/\text{m}^3$ . At 14  $\mu\text{g}/\text{m}^3$  this annual average is 72% below EPA's standard.

significantly affected by sulfates from volcanic emissions carried over O'ahu by Kona winds.

### Air-borne Particulates Data

FFY	Honolulu Annual Average of PM <sub>10</sub>	National Standard for PM <sub>10</sub>
1995	14	50
1996	14	50
1997	8	50
1998	9	50
1999	14	50

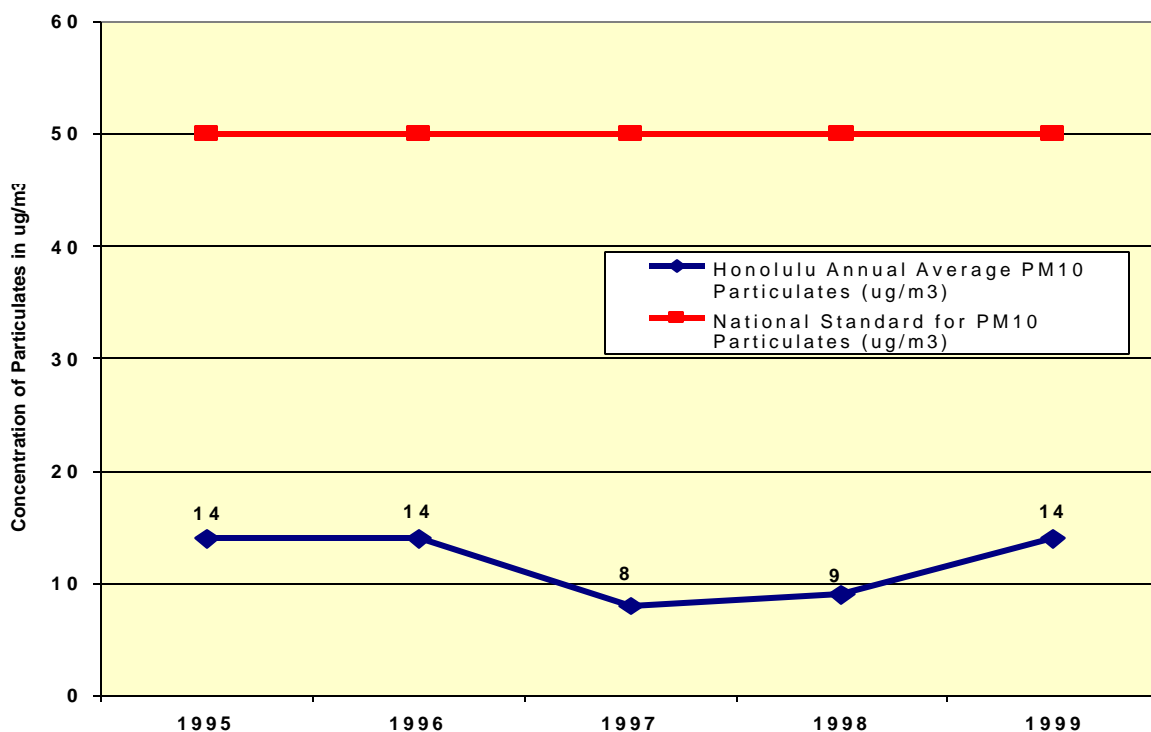
**Implications:** The concentrations measured in Honolulu are far below the national standard. The visual trend line shows that, within the past 5 years, the particulate levels dropped to a low of 8  $\mu\text{g}/\text{m}^3$  in 1997, and then slowly returned to 14  $\mu\text{g}/\text{m}^3$ . PM<sub>10</sub> concentrations are not

**Data Quality:** High ( $\pm 5$ -10% confidence).

**Source:** HDOH Clean Air Branch.

Data are required by the EPA.

**Hawaii's Annual Average Particulate Level (Honolulu Station) Compared to the National Standard**



## Ambient Levels of Carbon Monoxide Compared to National Standards

**Explanation:** EPA set the 1-hour average limit for carbon monoxide (CO) concentrations in ambient air at 40,000  $\mu\text{g}/\text{m}^3$ . This indicator reflects CO data measured at the Honolulu monitoring station located in the heart of downtown, an area with heavy automobile traffic. During the past five years, the highest 1-hour average was recorded at about 1,550  $\mu\text{g}/\text{m}^3$ , with 1999 reporting a five year low in CO concentrations of 1,169  $\mu\text{g}/\text{m}^3$ .

**Implications:** CO measurements are also far below the national standard of 40,000  $\mu\text{g}/\text{m}^3$ . The CO measure differs from the other indicators in this report as it reflects a 1-hour average each year rather than an annual average. The maximum 1-hour average is obtained by calculating the arithmetic mean of the highest 1-hour value recorded daily. In

addition to the 1-hour national standard, EPA has set an 8-hour standard for CO at 10,000  $\mu\text{g}/\text{m}^3$ . Hawai'i's recorded 8-hour values are also well below the national standard.

### Carbon Monoxide Data

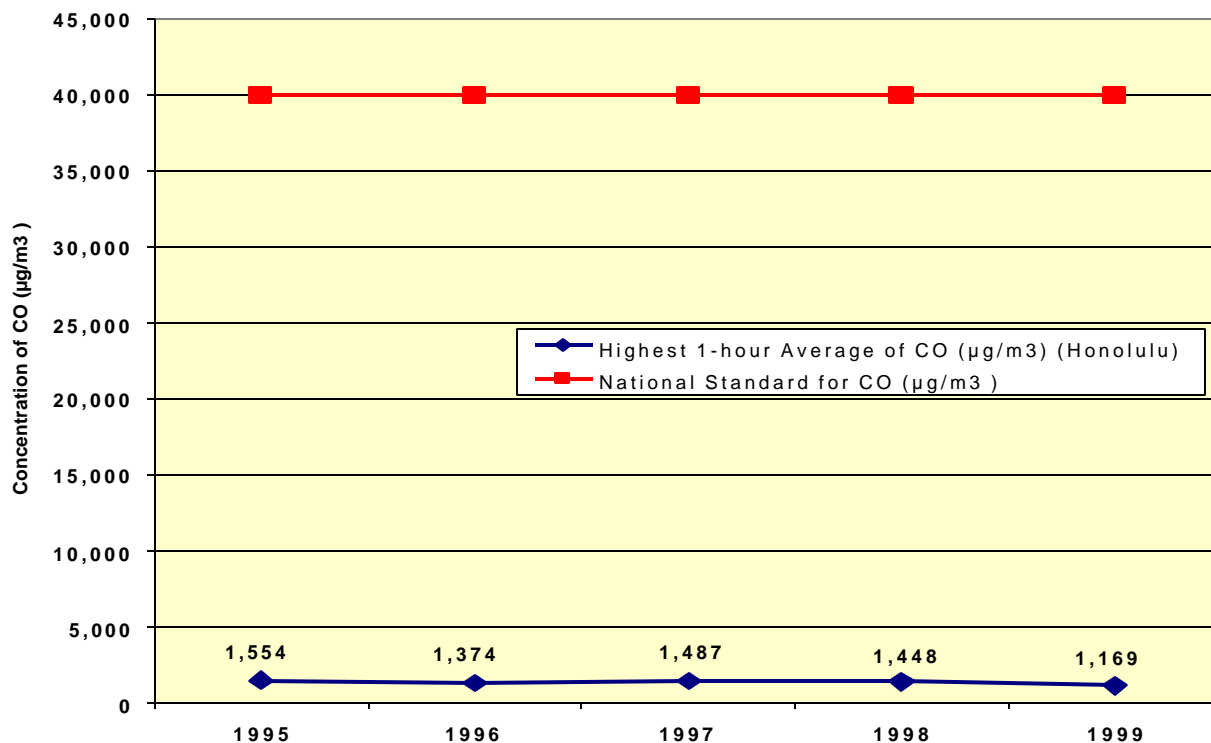
FFY	Highest 1-hour Average of CO ( $\mu\text{g}/\text{m}^3$ ) (Honolulu)	National Standard for CO ( $\mu\text{g}/\text{m}^3$ )
1995	1,554	40,000
1996	1,374	40,000
1997	1,487	40,000
1998	1,448	40,000
1999	1,169	40,000

**Data Quality:** High ( $\pm 5$ -10% confidence).

**Source:** HDOH Clean Air Branch.

Data are required by the EPA.

### Hawai'i's Highest 1-hour Average for Carbon Monoxide (Honolulu Station) Compared to the National Standard





# Asbestos & Indoor Air Quality Programs

[Noise, Radiation & Indoor Air Quality Branch (NRIAQB)]

## Percentage of Schools in Compliance with Asbestos Management Plan Regulations

**Explanation:** Buildings constructed before 1980 may contain asbestos in pipe insulation, structural fireproofing, mechanical areas, and wall plaster. If asbestos-containing building materials (ACBMs) are not properly identified and managed they may be unintentionally disturbed, causing the release of asbestos fibers. ACBMs still exist in Hawai'i's schools. EPA regulations require each school to prepare an Asbestos Management Plan, which documents the presence and condition of ACBMs and specifies provisions for properly managing any ACBM present. Plans are required to contain inspection and re-inspection reports; periodic surveillance reports; response action information; notices sent to parents and employees; designated person information and custodian training documents. Since the program's inception in 1988, over 400 schools have been contacted by NRIAQB staff and informed of this requirement. For the purposes of this measurement, compliance is assumed unless an inspection proves otherwise. Compliance declined to near 89% in 1998, but rose in 1999 to 91%. The number of

schools required to comply changes as new schools open and existing schools are closed.

**Implications:** The chart shows a decline in compliance since the mid 1990s, likely the result of increased inspections revealing additional non-compliance. Nine out of ten schools have an asbestos management plan, but there is not necessarily a direct correlation between the existence of a plan and its implementation. However, in this past year compliance improved, reflecting both an increase in the implementation of plans in schools with ACBMs and some older school closures as a result of new school construction.

Asbestos Compliance Data

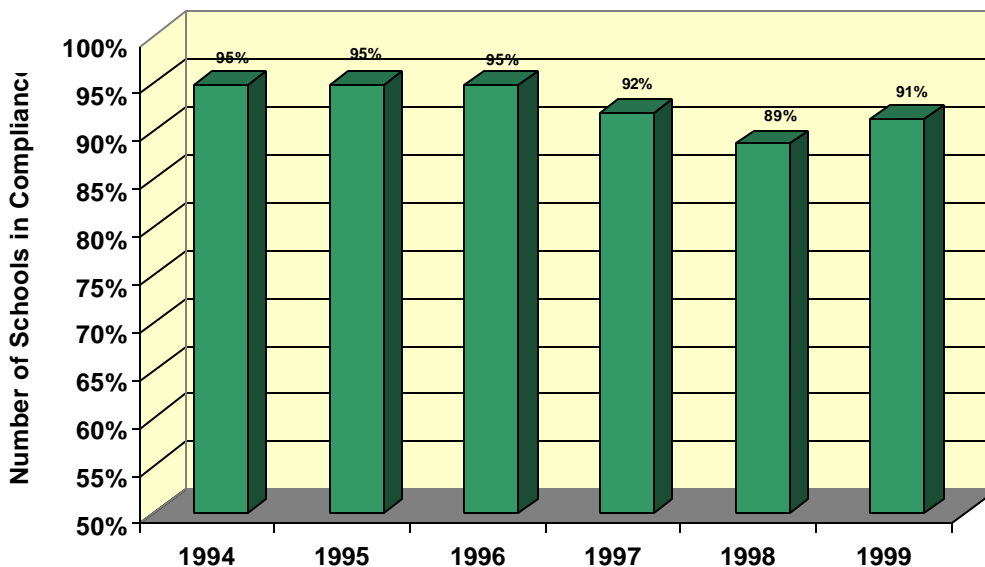
FFY	Total Number of Schools Required to Comply	Number of Schools in Compliance	Percentage of Schools in Compliance
1995	414	393	95%
1996	414	393	95%
1997	419	385	92%
1998	389	345	89%
1999	387	353	91%

**Data Quality:** Medium ( $\pm 10$ -25% confidence)

**Source:** Bobby Lopes (NRIAQB)

Data are required by the EPA.

Percentage of Schools in Compliance with Asbestos Management Plans



## Percentage of Schools Contacted Regarding the Indoor Air Quality "Tools for Schools" Program

**Explanation:** Indoor air pollution has been consistently ranked among the top five environmental risks to public health in comparative risk studies conducted by the EPA and its Science Advisory Board. In 1992, the *Hawai'i Environmental Risk Ranking* study ranked indoor air pollution as the top risk to human health in Hawai'i. The Hawai'i state legislature established an indoor air pollution program within the HIDOH in response to this finding. Funding for the HIDOH Indoor Air Quality Program is provided by EPA. A major element of the EPA workplan is the promotion of the "Tools for Schools" program. Through this program 'action kits' are distributed to willing personnel in schools with grades K-12. Since 1996 when this effort began, 41% (159 schools) of the total schools targeted has received the information packets.

**Implications:** Typical indoor air quality problems in schools include noise; heat; humidity; mold and mildew; intrusive outdoor air pollutants; and lack of adequate ventilation. Such conditions may impact the productivity of students and teachers and may exacerbate illnesses.

### Tools for Schools Data

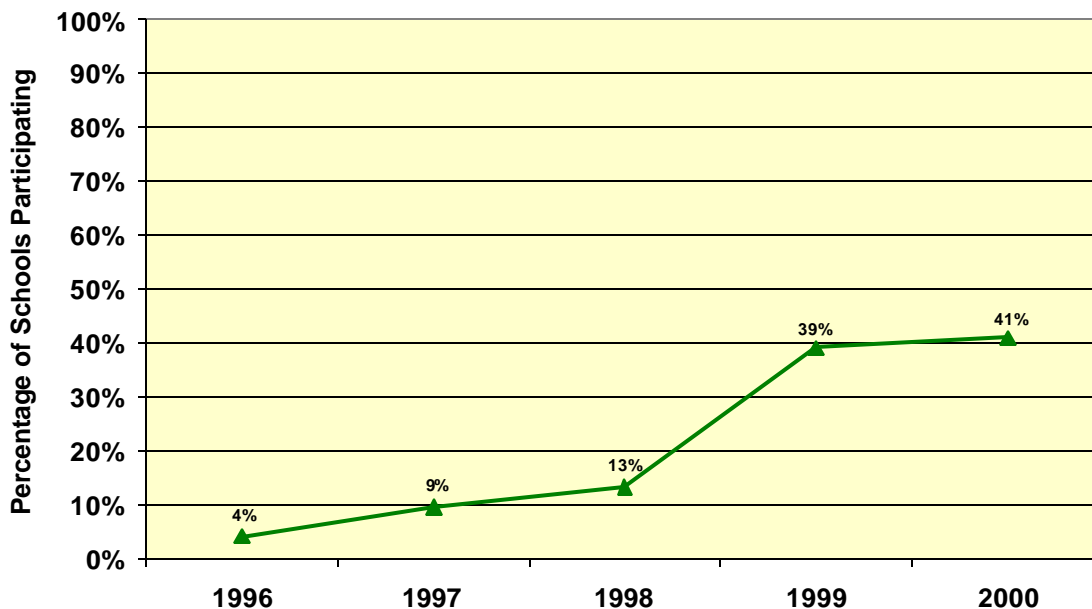
FFY	Total Number of Candidate Schools	Number of Schools Participating	Percentage of Schools Participating
1996	419	17	4%
1997	413	39	9%
1998	389	51	13%
1999	389	152	39%
2000	389	159	41%

**Data Quality:** Medium ( $\pm 10$ -25% confidence)

**Source:** Jeff Eckerd (NRIQOB)

Data are required by the EPA.

### Cumulative Percentage of Schools Participating in the Indoor Air Quality "Tools for Schools" Program



# Vector Control Branch Indicators

## Number of Zoonotic Laboratory Tests of Host Animals for early Detection or Confirmation of Zoonotic Diseases

**Explanation:** Of the 4,688 zoonotic laboratory tests conducted on rats, mice and mongooses sera in fiscal year 2000 0.6% tested positive. Plague and Murine Typhus are tested serologically while cultural procedures are utilized for Leptospirosis and Salmonella.

Serum is the fluid portion of whole blood after it has been allowed to clot. The surveys were conducted largely in residential areas, but included industrial, airport and seaport locations.

**Implications:** Surveys are done subjectively, as they are conducted in areas where there is a suspected health risk and in selected residential

communities. Data may not accurately reflect average statewide infection rates. When a tested area results in a significant positive finding the property owner of the test site is notified and the Vector Control Branch provides follow-up action.

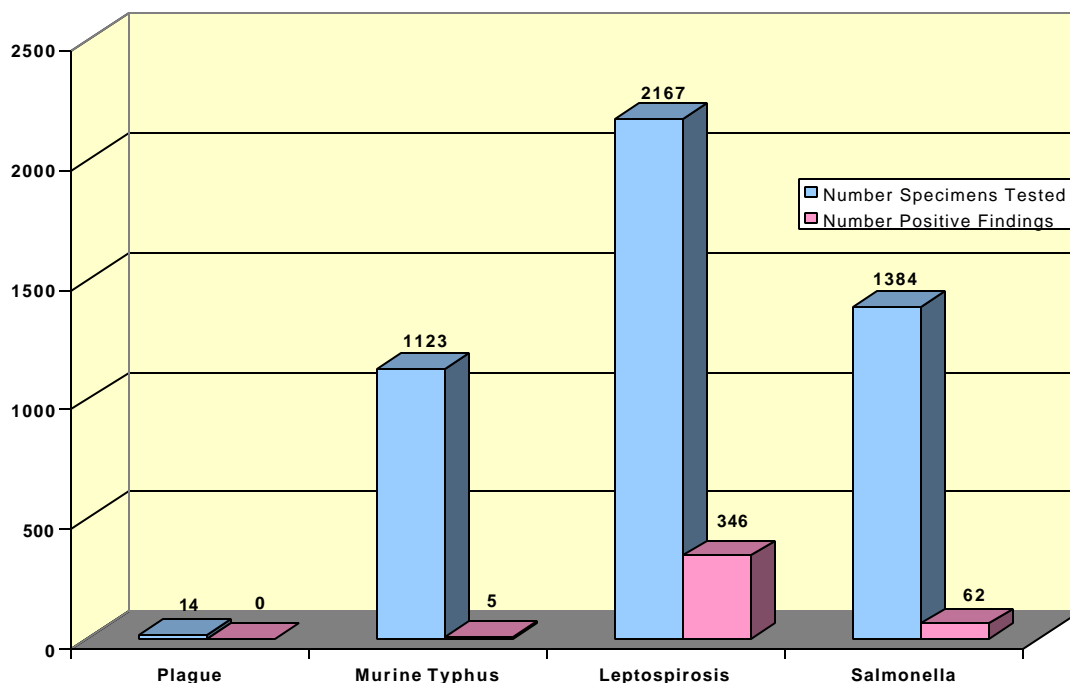
Number of Zoonotic Laboratory Tests of Rodents for Early Detection and Confirmation of Zoonotic Diseases					
	Plague	Murine Typhus	Leptospirosis	Salmonella	Total Tests
Number Specimens Tested	14	1123	2167	1384	4688
Number Positive Findings	0	5	346	62	413
Percent Positive	0.00%	0.45%	15.97%	4.48%	8.81%

**Data Quality:** Medium ( $\pm 10$ -25% confidence)

**Source:** Training Research Office (VCB)

Data are not required by the EPA

Number of Zoonotic Laboratory Tests of Rodents for Early Detection and Confirmation of Zoonotic Diseases



# Solid & Hazardous Waste Branch Indicators

## Contaminated Sites with Clean-up Completed

**Explanation:** Progress made in the clean-up of contaminated sites, broken down into three categories, is measured by the date of completion of the clean-up process. The vast bulk of the clean-ups are comprised of leaking underground storage tank (LUST) sites. The number of sites cleaned up almost doubled between 1998 and 2000. The next three indicators on the following pages will provide more specific data relating to the progress of each site category.

**Implications:** The number of known LUST sites has increased significantly since December 1998, when new rules were put into effect requiring many older tanks to be removed from the ground. Although the contents of many tanks were discovered to have leaked into the

surrounding soil, the contamination is being addressed at a faster rate than previously.

### Contaminated Sites Clean-up Data

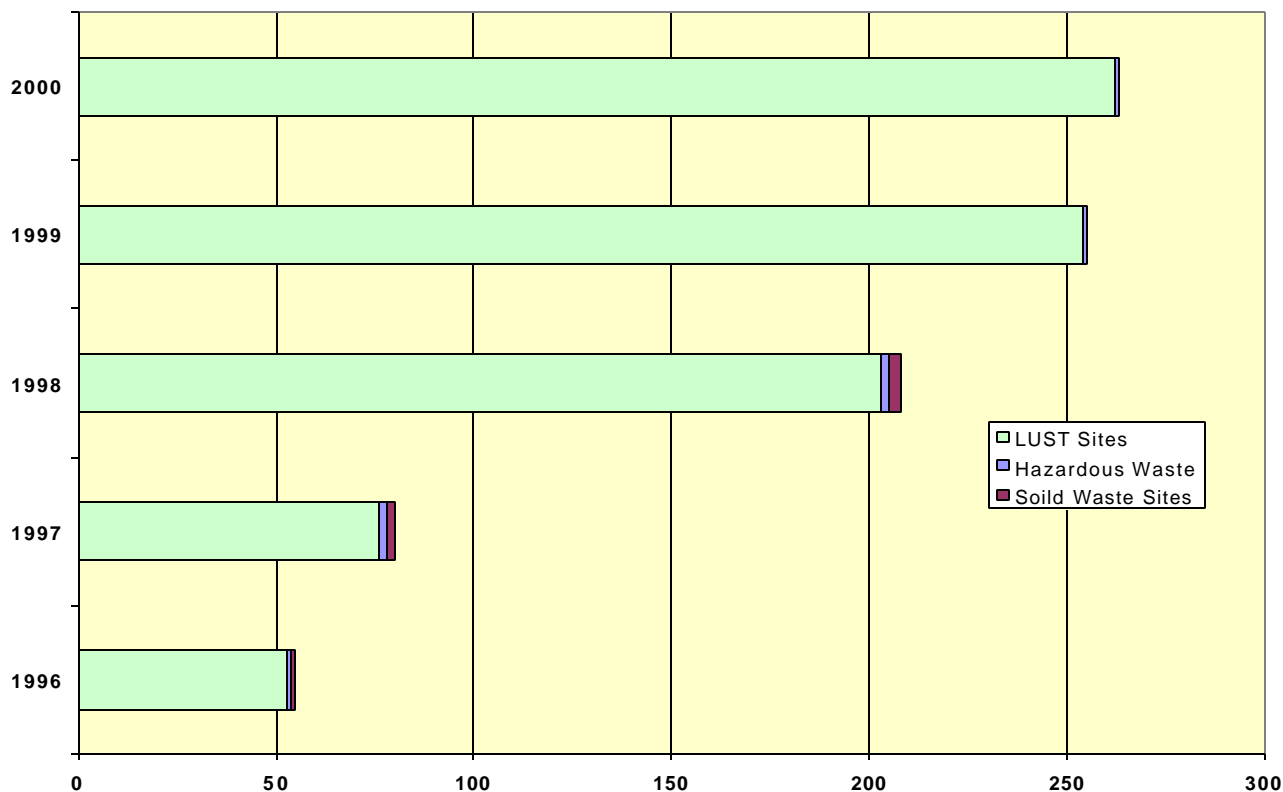
FFY	Hazardous Waste	Solid Waste Sites	LUST Sites	Total Sites
1996	1	1	53	55
1997	2	2	76	80
1998	2	3	203	208
1999	1	0	254	255
2000	1	0	262	263

**Data Quality:** High ( $\pm 5\text{-}10\%$  confidence).

**Sources:** Grace Simmons (SHWB), Lane Otsu (OSWM), and Greg Olmsted (SHWB).

Data are required by the EPA.

**Number of Contaminated Sites Cleaned-up**



## Cumulative Percentage of Leaking Underground Storage Tank (LUST) Sites with Clean-Up Partially Addressed or Completed

**Explanation:** Of the 1,614 confirmed releases from underground storage tanks from 1986 to 2000, almost 85% have had 'clean-up' initiated and/or completed (i.e., efforts have begun which: manage contaminated soil, remove free product, manage dissolved petroleum, and/or monitor the groundwater or soil). Twenty percent of the sites have had 'clean up' partially addressed, and 65% have been cleaned up. Another 15% have yet to be addressed.

### Implications:

Some of the data for this indicator are included with data

listed on the previous page; the data on this page pertains only to LUST sites and includes releases which have received no clean-up activity or which have only

had clean-up partially addressed. Clean-ups for this category of contaminated sites has increased recently in response to the increase in reported releases. Of the 15% of the sites that have not been addressed, some are recent releases for which the HDOH has yet to receive information on clean-up efforts. None of the unaddressed sites constitutes an emergency situation; all emergencies are addressed immediately by the Hazard Evaluation & Emergency Response personnel.

**LUST Site Clean-ups Data**

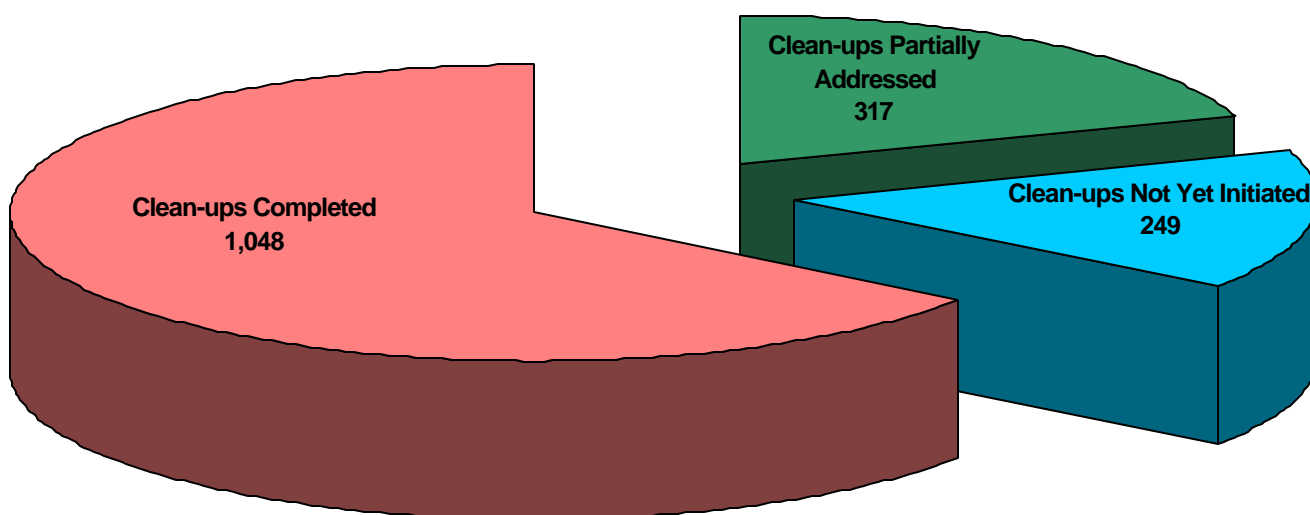
Total Tanks	Active Tanks	Closed Tanks	Confirmed Releases	Clean-ups Partially Addressed	Clean-ups Not Initiated	Clean-ups Completed
6,591	2,056	4,535	1,614	317	249	1,048

**Data Quality:** High ( $\pm 5$ -10% confidence)

**Source:** Greg Olmsted (SHWB)

Data are required by the EPA.

**Status of Leaking Underground Storage Tank Sites Cleaned Up as of 2000**



## Quantity of Hazardous Waste Generated in Hawai'i

**Explanation:** Hazardous waste generation, as presented in this indicator, is reported to EPA by "large quantity generators" biannually in odd years. "Small quantity generators" were included only in the 1995 data; as a result waste generation appear to peak in 1995. Overall, the quantity of waste generated, as shown in this indicator, has ranged from roughly 1,500 to 3,000 tons annually during the period from 1989 to 1997. Hazardous wastes in wastewater have been excluded from the indicator because the data quality for wastewater volumes is particularly questionable, especially since volume was removed as an EPA reporting requirement in 1997. The majority of hazardous wastes in Hawai'i are sent to permitted commercial treatment storage disposal facilities on the mainland, while the recyclable solvents are processed in state. Hazardous waste is defined in 40 CFR §261.3 as waste having any of the four hazardous characteristics: ignitability, corrosivity, reactivity, or toxicity, or a waste specifically listed as a

substance to be regulated as a hazardous waste. Common examples include paint, battery acid, oil, lead, and waste bleaches.

**Implications:** Compared to other states, hazardous waste generation has been relatively low in Hawai'i. During the 10 year period represented by this indicator, there appears to be only a slight increase in hazardous waste generation.

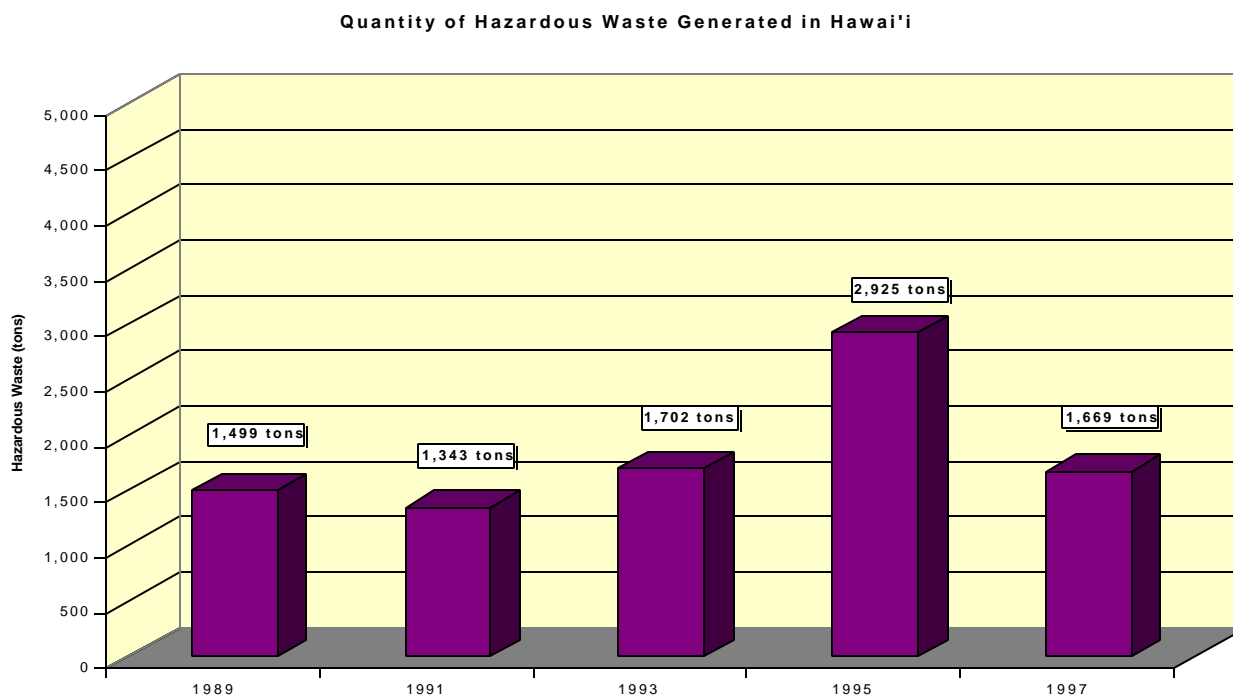
### Hazardous Waste Generation Data

FFY	Hazardous Waste Generated in Tons
1989	1,499
1991	1,343
1993	1,702
1995	2,925
1997	1,669

**Data Quality:** Low ( $\pm 25$ -50%) confidence.

**Source:** Grace Simmons (SHWB).

Data are required by the EPA.





## Percentage of Solid Waste Recycled in Hawai`i

**Explanation:** The percentage of solid waste diverted from landfills for recycling in Hawai`i is slowly increasing, recently reaching 25%. The amount of solid waste produced each year has not risen significantly; in fact, this past year it decreased slightly. For the purposes of this indicator tires and batteries are included in the other section in the graph below. Amounts diverted do not include waste sent to H-Power for incineration and power generation.

**Implications:** Hawai`i's legislated goal is 50% solid waste recycling by the year 2000. We have fallen far short of that goal. Hawai`i does not have a large local market for material, so most recycled goods must be shipped out for processing. These shipping costs make it

difficult for Hawai`i recycling businesses to compete, especially in a period when the market price for raw recycled materials is low.

### Total Solid Waste Recycling Data (in tons)

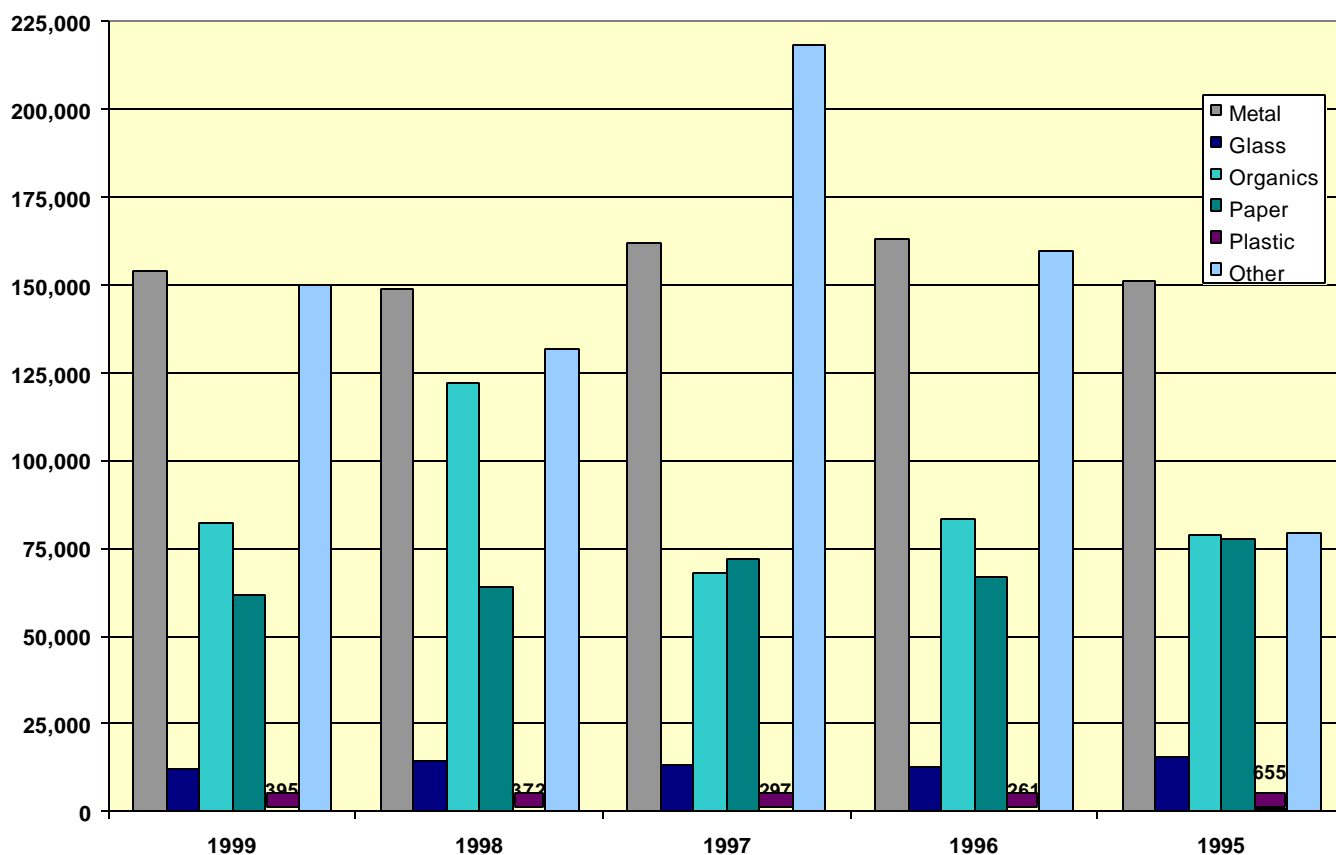
FFY	Produced Statewide	Disposed Statewide	Diverted Statewide	Percentage Diverted
1995	2,023,000	1,620,000	403,000	19.9%
1996	2,122,000	1,619,000	503,000	23.7%
1997	2,132,000	1,599,000	533,000	25.0%
1998	2,004,000	1,524,000	481,000	24.0%
1999	1,884,477	1,424,005	460,472	24.4%

**Data Quality:** 1995-96: Low ( $\pm$  25-50%) confidence; 1997-99: Medium ( $\pm$  10-25%) confidence.

**Source:** Lane Otsu (OSWM).

Data are not required by the EPA.

### Tons of Diverted Solid Waste



# Hazard Evaluation & Emergency Response Office Indicator

## Oil and Chemical Releases in Hawai'i

**Explanation:** Any release of oil or chemicals must be reported to HDOH. No clear trend exists in the number of oil and chemical releases from 1995 to 1999. The database currently contains only initial information regarding a release. Follow-up information on releases (including volumes of releases) is not included.

**Implications:** HEER office crews respond to roughly 400-500 'spills' each year. Most are minor, a few are major, and some are false alarms. An increase in the number of releases does not necessarily correlate with an increase in damage to the environment. Future tracking and reporting will include

volumes of spills in addition to numbers of spills. This tracking system is expected to be operational by fiscal year 2001.

### Oil and Chemical Release Data

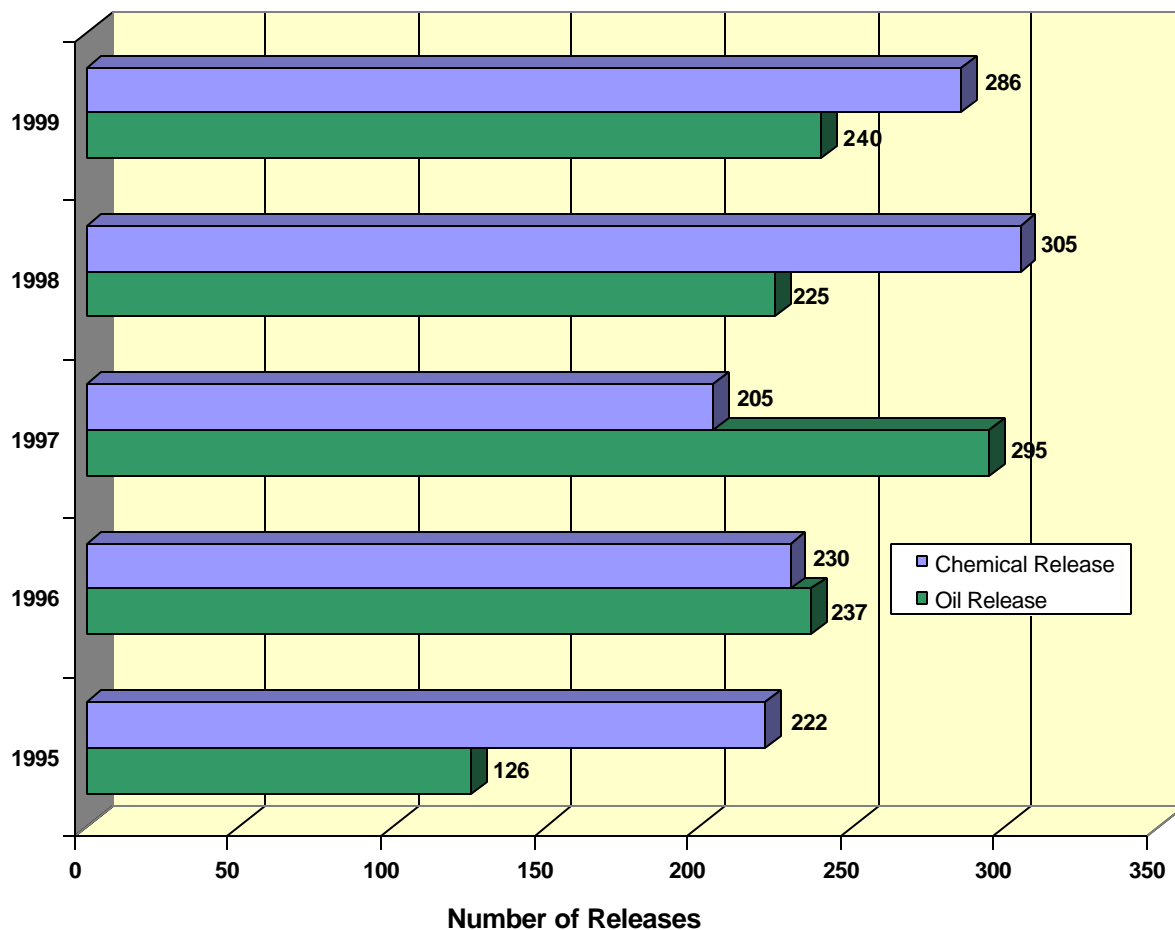
FFY	Oil Releases	Chemical Releases
1995	126	222
1996	237	230
1997	295	205
1998	225	305
1999	240	286

**Data Quality:** Medium ( $\pm$  10-25%) confidence.

**Source:** Marsha Graf (HEER).

Data are not required by the EPA.

### Oil & Chemical Release to Land and Water in Hawai'i



# Safe Drinking Water Branch Indicators

## Percentage of Hawai'i's Population Served Drinking Water in Compliance with 1994 State and Federal Microbiological and Chemical Maximum Contaminants Levels (MCLs)

**Explanation:** Ninety-eight to 99.8% of Hawai'i's residents and visitors were served drinking water which does not exceed microbiological or chemical standards, called maximum contaminant levels (MCLs). Population figures are derived by summing the populations each public system reports. Water that exceeds MCLs is believed to be harmful to human health. The population served drinking water in exceedance of an MCL is counted for the entire year. In actuality, the exposure is usually for one week or less. This indicator uses the 1994 standards in order to show trends based on a steady baseline. Measuring progress towards a moving target (due to changing MCLs) would make this indicator too complex.

large Maui County Water system. In actuality, only a portion (0.4%) of consumers in that water system were exposed to water which exceeded the MCL. A 98.7% compliance rate indicates that at some point in time, up to 14,900 (1.3% of 1.1 million) people were possibly exposed to drinking water above MCLs. Whenever a violation is found, hand-delivered and/or published notices notify recipients of the problem.

### Drinking Water MCL Compliance Data

FFY	Total Population Served Drinking Water	Population Served Water Below MCLs	Percentage Population Served Water Below MCLs
1995	1,343,538	1,317,301	98.0%
1996	1,347,266	1,341,126	99.5%
1997	1,334,397	1,310,573	98.2%
1998	1,333,717	1,331,353	99.8%
1999	1,294,772	1,291,099	99.7%
2000	1,104,343	1,089,452	98.7%

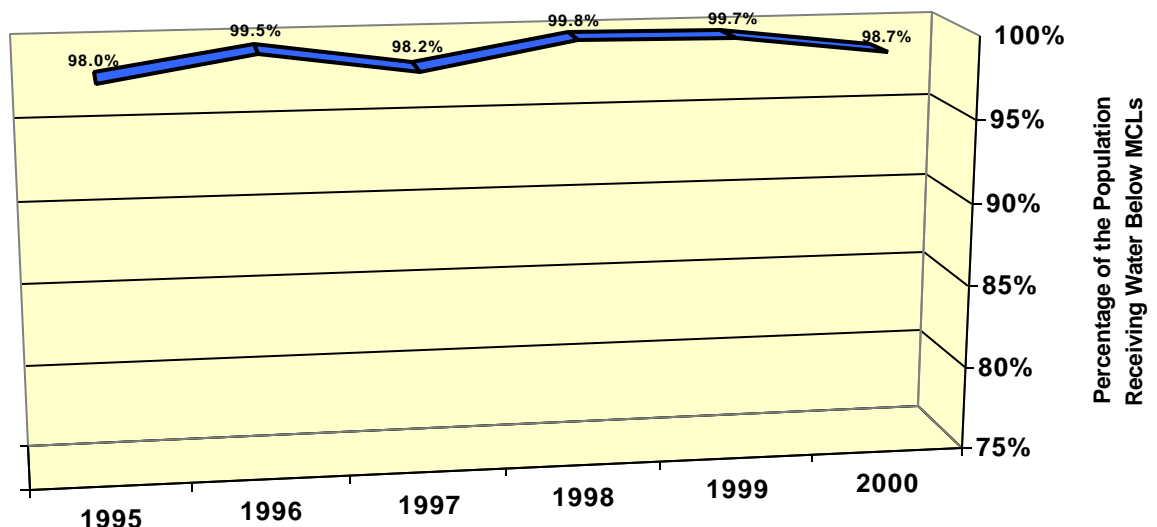
**Implications:** The compliance rate has been generally improving in the last 5 years except for 2000. The decrease in population served water below MCLs is due to a microbiological violation of one

**Data Quality:** High ( $\pm$  5-10%) confidence.

**Source:** Ann Zane (SDWB)

Data are required by the EPA.

### Percentage of Hawaii's Population Served Drinking Water in Compliance with 1994 Maximum Contaminant Levels



## Cumulative Number of Sanitary Surveys Conducted for Drinking Water Systems in Hawai`i, 1997-2000

**Explanation:** A sanitary survey consists of a periodic review of the water source, facilities, equipment, operation and maintenance practices and records to verify that a public water system is operating properly. EPA requires HDOH to conduct 'Sanitary Surveys' of all public water system source, treatment, and distribution operations over a 5 year period. For Hawai`i, that averages 27.4 surveys per year. The SDWB is on schedule to complete sanitary surveys of all 132 public water systems by 2001.

**Implications:** The last round of surveys was held from 1988-91, so it is a positive move for HDOH to inspect these water systems again. Within 30 days of each survey, the SDWB submits a sanitary survey report to the purveyor discussing any deficiencies and recommendations. The SDWB also requests a response from the purveyor within 30 days of receiving

the report. When problems are found during surveys, the risk of water contamination is assessed. If the problem poses an imminent risk of contamination to the source or finished water, the SDWB will direct the purveyor to promptly correct the problem.

### Sanitary Survey Data

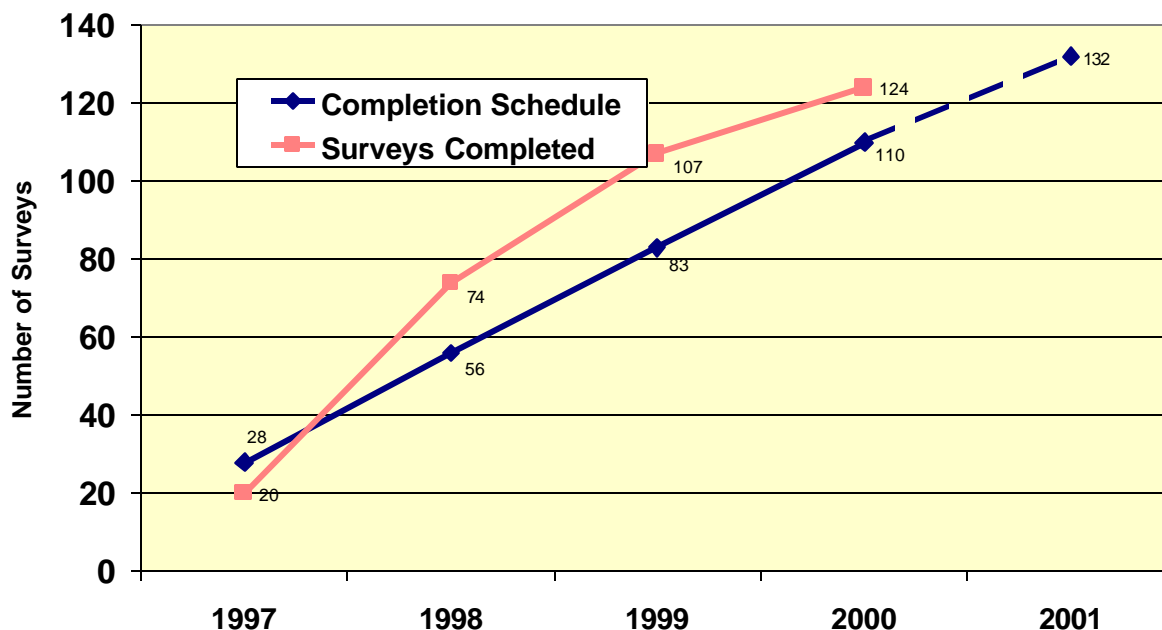
FFY	Total Number of Systems to Survey	Surveys Completed Annually
1997	28	20
1998	28	54
1999	27	33
2000	27	17
2001	27	no data

**Data Quality:** High ( $\pm 5-10\%$ ) confidence.

**Source:** William Wong (SDWB).

Data are required by the EPA.

### Drinking Water Sanitary Surveys Completed Compared to EPA-Required Completion Schedule



## Percentage of Underground Injection Wells in Compliance with State and Federal Regulations

**Explanation:** The percentage of underground injection well facilities in compliance with state and federal regulations (that is, those with a current permit) has increased about 5% from 1999 to 2000. The majority of wells not considered in compliance are drainage injection wells used for rainfall runoff disposal. Wells for sewage, commercial and industrial injection are given higher priority and have a higher compliance rate, approximately 88%. Most drainage injection well facilities had valid permits at one time, but many of those permits have expired. Permit renewals for low priority facilities have not been aggressively pursued by HDOH in favor of renewals and compliance of higher risk injection well facilities.

**Implications:** Drainage injection wells pose a relatively low potential for environmental contamination, as compared to industrial or sewage related facilities. However, for counting purposes, all facilities are weighed equally. In the future, it is anticipated that new regulations will provide a permit-by-rule approach to ensure compliance for drainage injection wells.

### Underground Injection Well Facility Compliance Data

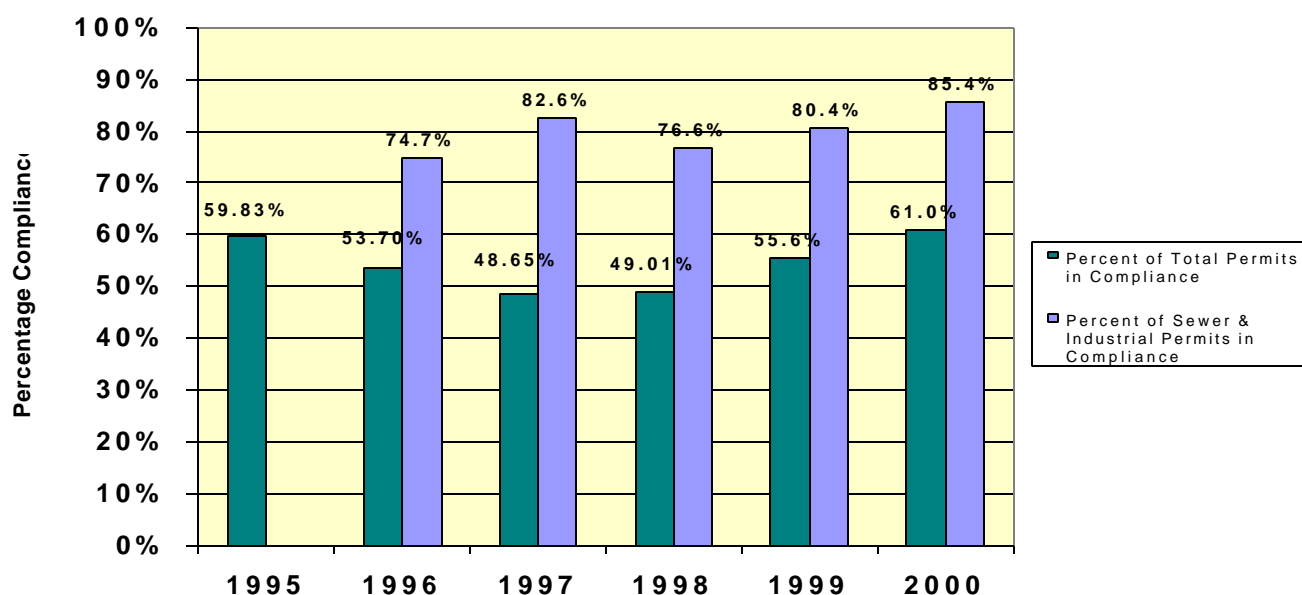
FFY	Total UIC Permits	Total Expired Permits	Percent of Total Permits in Compliance	Percent of Sewer & Industrial Permits in Compliance
1995	478	192	59.8%	no data
1996	473	219	53.7%	74.7%
1997	483	248	48.7%	82.6%
1998	504	257	49.0%	76.6%
1999	559	248	55.6%	80.4%
2000	574	224	61.0%	85.4%

**Data Quality:** High ( $\pm$  5-10%) confidence.

**Source:** Chauncey Hew (SDWB)

Data are required by the EPA.

### Percentage of Underground Injection Well Facilities in Compliance with State and Federal Regulations



# Clean Water Branch Indicator

## Beach Closure/Warning Days Annually Due to Sewage or Chemical Releases

**Explanation:** This indicator reflects the number of days each calendar year that HDOH required warning or closure signs to be posted alongside recreational coastal waters due to sewage or chemical spills. Overall, 1996 seems to be the worst year for closures/warnings with subsequent decreases in the following years.

**Implications:** In 1996, HDOH published a goal of 5 beach closure/warning days posted per year by the year 2000. That same year, heavy rains influenced beach posting as a result of increased bypassing of wastewater by treatment plants during times of localized flooding. The increase of beach postings for 1999 was largely due to precautionary measures taken, as not all reported

releases resulting in beach posting were confirmed.

### Beach Closure/Warning Data

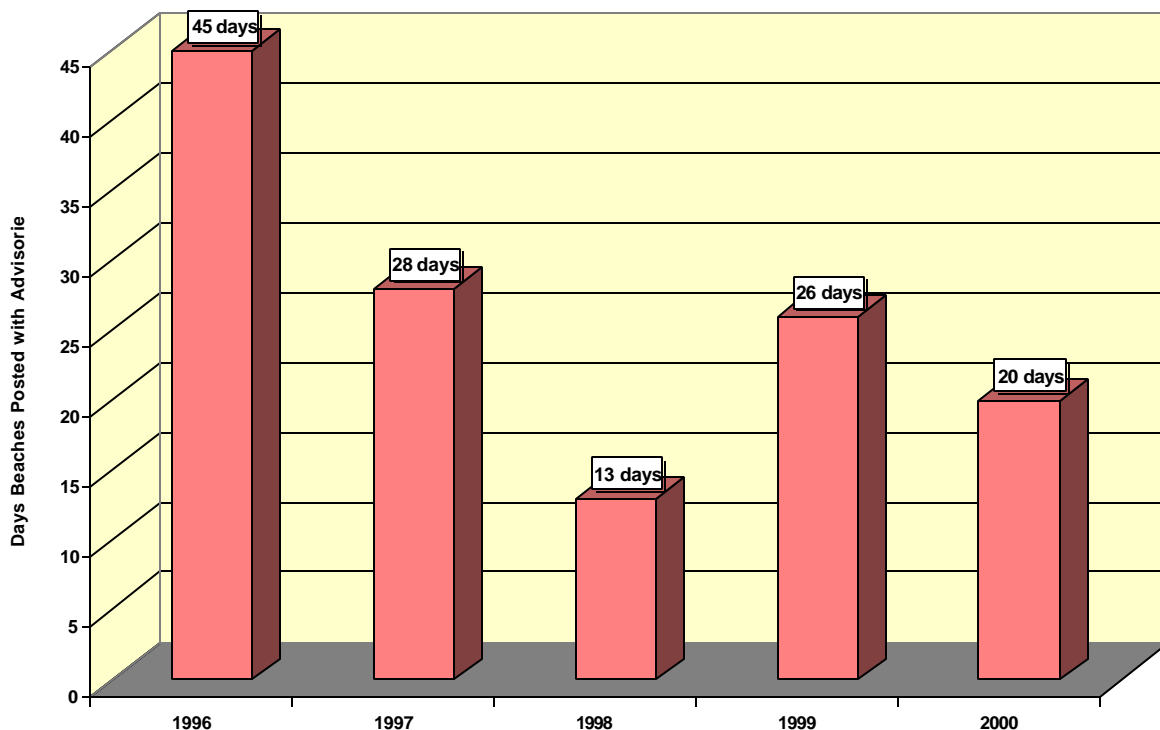
Calendar Year	Days Beach Posted with Advisory
1996	45
1997	28
1998	13
1999	26
2000	20

**Data Quality:** Low ( $\pm 25\text{-}50\%$ ) confidence.

**Source:** Ann Teruya (CWB), Natural Resources Defense Council (NRDC) web site and the OEQC 1998 Annual Report.

Data are not required by the EPA, but are reported in HDOH's biennial 305(b) report.

### Beach Posting Days Due to Sewage or Chemical Spills





# Environmental Planning Office Indicator

## Statewide Assessment of Stream Quality, 1997

**Explanation:** In 1996-97, EPA staff, assigned to the EPO, conducted a stream quality assessment in Hawai'i for the purpose of revising our list of Water Quality Limited Segments (WQLSs), as required by federal regulations. Of the 376 known perennial streams in Hawai'i, 23% (87 streams) were fully or partially surveyed. Easily accessible short stream segments were assessed using visual indicators of stream impairment such as excessive algal growth, excessive stream bank erosion, and litter. Water quality data were analyzed only for a few streams where data had been previously collected. Characteristics that were not measured include: support and propagation of native aquatic life, chemical pollutants, and habitat loss. Stream selection for assessment was largely based on public nomination on the presumption that the streams might be candidates for the WQLS list. Even so, 24% of those streams surveyed showed no impairment. Two-thirds of the rest showed moderate impairment, 4% were severely impaired, while 7% were only slightly impaired. Trend data are not available because HDOH has collected too few years of data to assess stream quality on a systematic basis.

**Implications:** Because the selection of streams was skewed toward finding impaired

streams, it can be assumed that these results, if applied broadly to the entire state, provide a worst case scenario. Still it is alarming to see so many of Hawai'i's streams are impaired in some way. In the 1999 edition of HDOH's Indicators of Environmental Quality the EPO recommended improving efforts to systematically survey Hawai'i's streams on a permanent, rotating basis. Since 1999 the EPO has concentrated on water quality in streams and has prepared a draft TMDL (Total Maximum Daily Load) document for the Waimanalo Stream, O'ahu.

### 1996-1997 \*Stream Survey Data

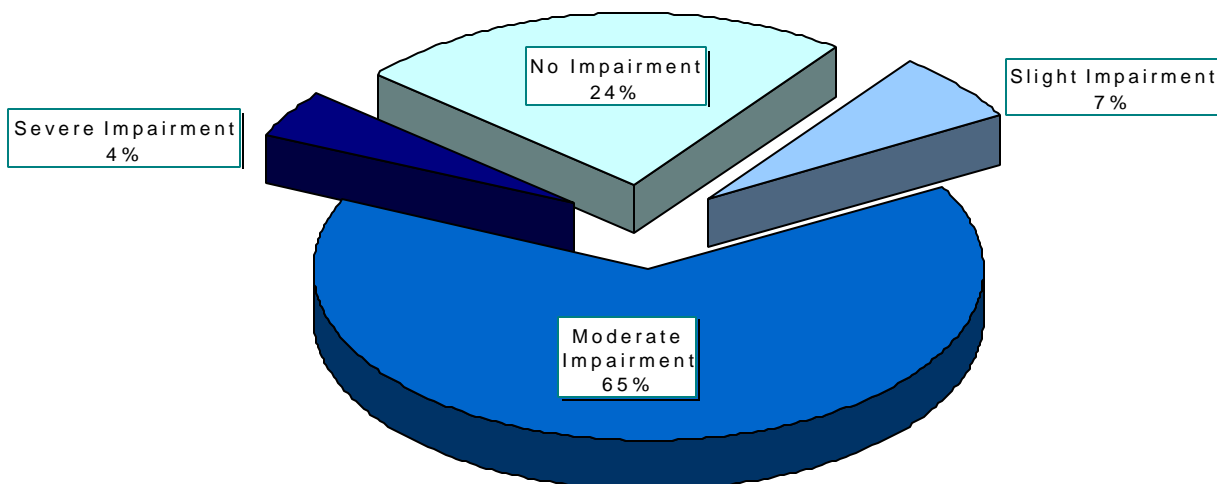
Level of Impairment	Number of Streams	Percentage Surveyed
No Impairment	22	24%
Slight Impairment	6	7%
Moderate Impairment	59	65%
Severe Impairment	4	4%
Total Streams Surveyed	91	100%
* Total Number of Perennial Streams = 376		

**Data Quality:** Medium ( $\pm 10$ -25%) confidence.

**Source:** State of Hawai'i Clean Water Act 303(d) List for 1999.

Data are required by the EPA.

### A Broad Assessment of Stream Quality



# Wastewater Branch Indicators

## Percentage of Wastewater Recycled Annually

**Explanation:** Wastewater recycling (or reuse of treated water to a level appropriate for irrigation purposes) has risen from roughly 11 million gallons per day in 1995 to roughly 19.5 million gallons per day in 1999, representing an increase of 5.6% over the past five-year period.

**Implications:** HIDOH had plans to encourage reuse of 25% of all wastewater. Recent developments make that a much less likely goal. Without more rapid development of reuse options by large treatment plant

owners (i.e., the counties and military), there will not be a significant increase in large-scale reuse.

### Wastewater Reuse Data

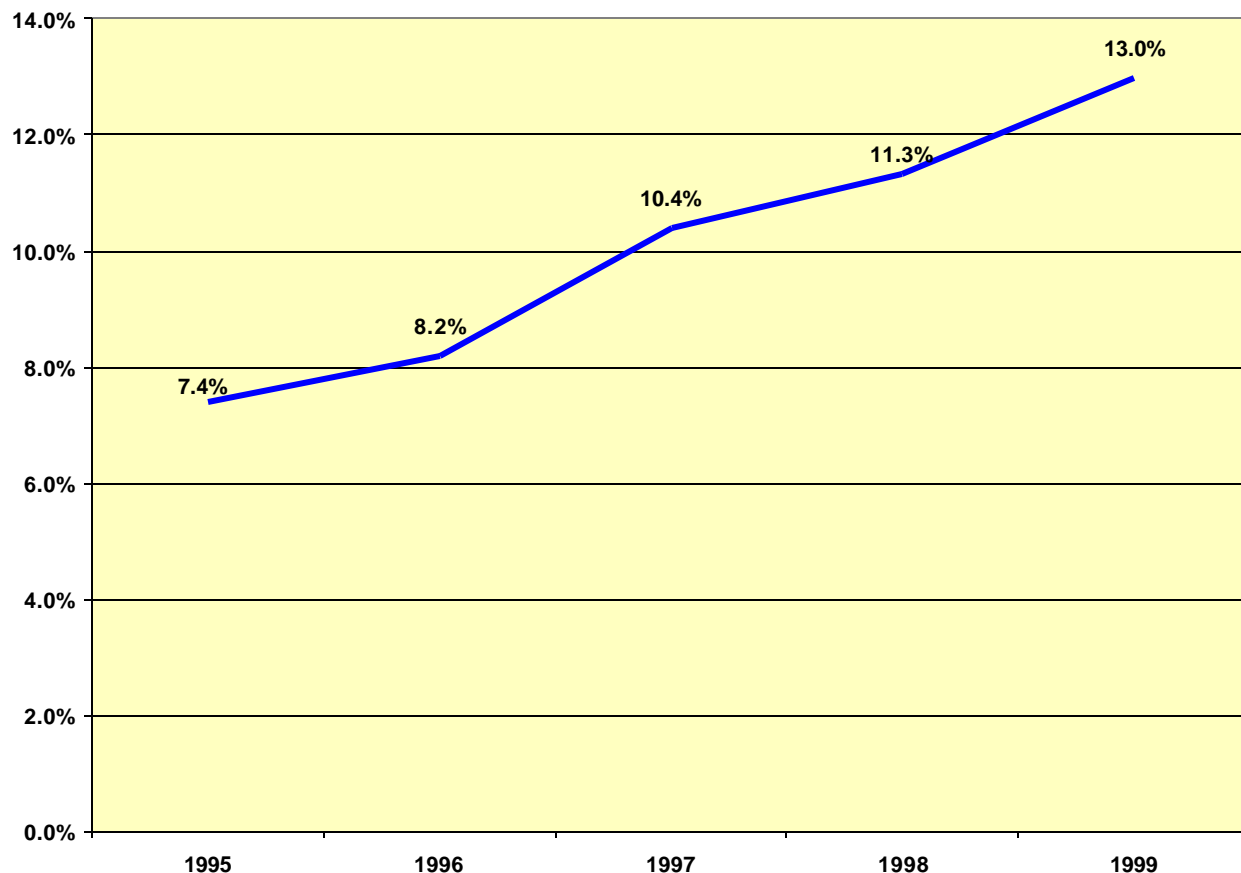
FFY	Total Wastewater Treated (MGD)	Wastewater Reused (MGD)	Percentage Reused
1995	150.1	11.1	7.4%
1996	150.1	12.3	8.2%
1997	150.0	15.6	10.4%
1998	150.0	17.0	11.3%
1999	150.0	19.5	13.0%

**Data Quality:** Medium ( $\pm 10$ -25%) confidence.

**Source:** Tomas See (WWB).

Data are not required by the EPA.

## Percentage of Wastewater Reused Annually



## Wastewater Treatment Plant Operation & Maintenance Compliance Records

**Explanation:** Slightly more than three-quarters of Hawai'i's wastewater treatment plants show full compliance when inspected by the Wastewater Branch staff. Any operation and maintenance deficiencies, effluent violation or permit violation warrant an unsatisfactory rating.

equipment breaks down less often. A major cause of the unsatisfactory ratings arises from the number of underground injection permits (which are covered by the O&M inspection) that have expired (see page 19 for a discussion of the underground injection permit program).

### Wastewater Treatment Plant O&M Data

FFY	Number of Plants Inspected	Number of Plants Rated Unsatisfactory	Percent in Compliance
1995	163	35	79%
1996	103	23	78%
1997	176	45	74%
1998	169	41	76%
1999	164	35	78%

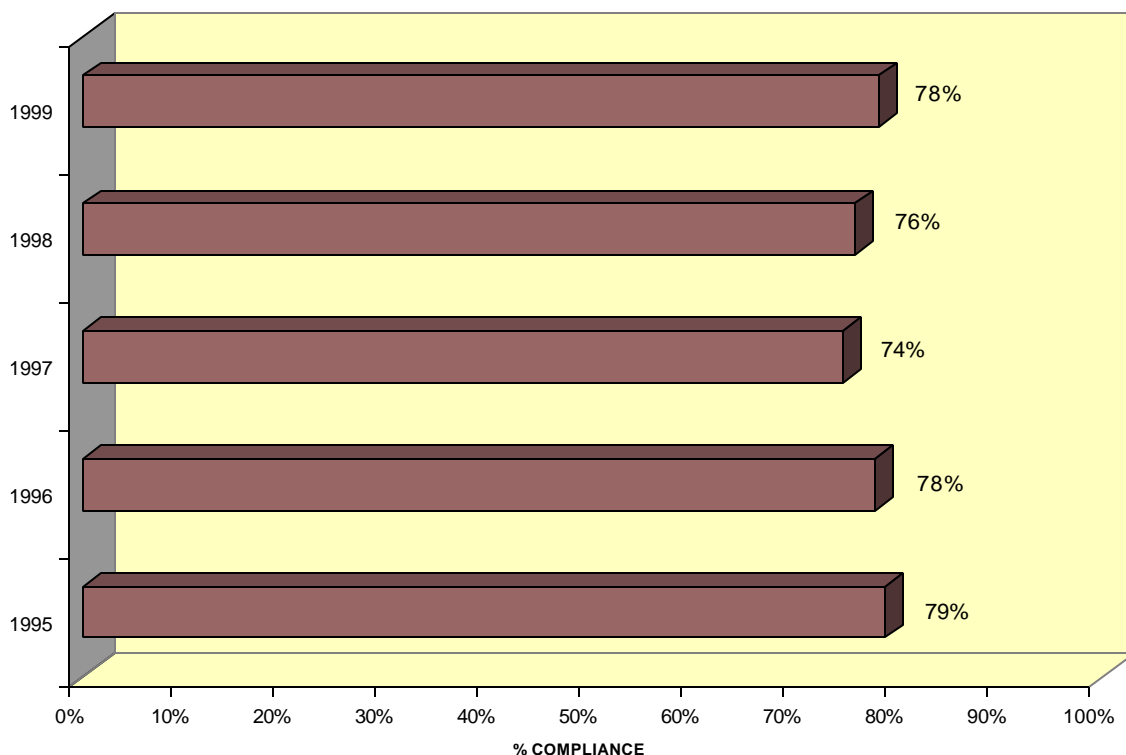
**Implications:** Three-quarter compliance is much better than the 55% compliance rate of the early 1990s (not shown by data on this page). However the stated goal of the WWB is to reach 95% compliance by the year 2000. The WWB staff believe operation and maintenance compliance leads to fewer sewage spills because well-maintained

**Data Quality:** High ( $\pm 5$ -10%) confidence.

**Source:** Marshall Lum (WWB).

Data are not required by the EPA.

### Wastewater Treatment Plant Operation & Maintenance Compliance Record



# Enforcement Indicator

## Annual Enforcement Report Summary

**Explanation:** HDOH publishes a quarterly inspection and enforcement report similar to the annual report (below). The quarterly reports summarize notices of violation of the formal actions taken, describe the nature of the violation, the party involved, and the fine assessed, if any.

**Implications:** The table below shows a tally of the inspections and responses conducted by HDOH pollution control program personnel during the period from July 1999 through September 2000. Formal and informal enforcement actions, and the settlements that arose out of those actions, are counted as well. Inspections and enforcement actions are listed by program area.

A tally of the fines originally issued, the fines settled, and the fines collected during this time period are listed. Many fines are collected on a payment plan basis over time; as a result the chart does not accurately reflect delinquencies. In addition the number of other penalties, such as supplemental environmental projects and the number of the completed projects are listed.

**Data Quality:** Medium ( $\pm 10\text{-}25\%$ ) confidence.

**Source:** Melissa O'Connor-Fariñas (EPO).

Data are not required by the EPA.

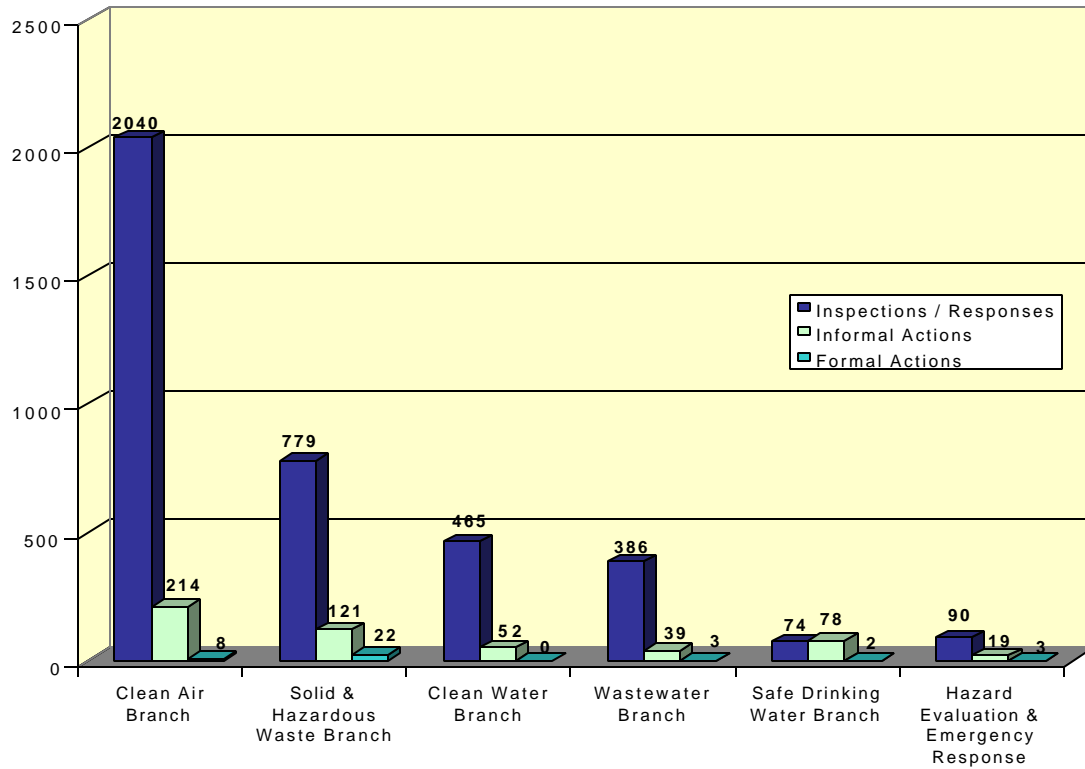
	Inspections / Responses	Informal Actions <sup>1</sup>	Formal Actions <sup>2</sup>	Formal Actions Concluded	Formal Actions Pending	Fines Originally Issued	Fines Settled	Fines Collected
	July, 1999 - September, 2000	July, 1999 - September, 2000	July, 1999 - September, 2000	July, 1999 - September, 2000	Total as of September, 2000	Total \$ as of September, 2000	Total \$ as of September, 2000	Total \$ as of September, 2000
<b>Clean Air Branch</b>								
Fugitive Dust	680	48	0	0	0	\$0.00	\$0.00	\$0.00
Noncovered Sources	133	26	3	1	4	\$117,400.00	\$30,800.00	\$13,300.00
Covered Sources	268	91	4	3	0	\$99,500.00	\$46,900.00	\$80,400.00
Agricultural Burning	404	13	1	0	1	\$7,200.00	\$7,182.00	\$0.00
Open Burning	130	30	0	0	1	\$4,600.00	\$0.00	\$0.00
Others	425	6	0	0	0	\$0.00	\$0.00	\$0.00
<b>Solid &amp; Hazardous Waste Branch</b>								
Underground Storage Tanks	244	45	0	0	0	\$38,450.00	\$0.00	\$3,900.00
Hazardous Waste	105	26	14	28	5	\$502,535.00	\$163,898.00	\$98,648.00
Solid Waste	430	50	8	4	5	\$111,398.00	\$69,500.00	\$32,250.00
<b>Clean Water Branch</b>								
Permitted Discharges (NPDES)	219	27	0	0	2	\$0.00	\$0.00	\$0.00
Non-permitted Discharges	217	22	0	1	3	\$0.00	\$0.00	\$0.00
Water Quality Certifications	29	3	0	0	0	\$0.00	\$0.00	\$0.00
<b>Wastewater Branch</b>								
Wastewater Treatment Plants	241	2	0	2	1	\$0.00	\$0.00	\$0.00
Individual Wastewater Systems	112	34	3	1	12	\$0.00	\$24,000.00	\$16,000.00
Animal Waste	13	2	0	0	0	\$0.00	\$0.00	\$0.00
Other	20	1	0	0	0	\$0.00	\$0.00	\$0.00
<b>Safe Drinking Water Branch</b>								
Public Water Systems	34	41	0	2	2	\$0.00	\$315,800.00	\$101,000.00
Wells - Underground Injection Control	40	37	2	2	1	\$45,700.00	\$45,700.00	\$10,400.00
<b>Hazard Evaluation &amp; Emergency Response</b>								
Oil Spills	22	5	2	2	0	\$0.00	\$0.00	\$0.00
Hazardous Waste Releases	68	14	1	0	0	\$0.00	\$0.00	\$0.00

<sup>1</sup> Informal actions generally cover less serious issues such as small infractions by individuals, or violations of permit technicalities which do not directly impact environmental quality. Specifically, informal actions are those in which the violator is notified of the violation and is given an opportunity to correct the violation before a formal action is taken. Informal actions are not recorded in this category.

<sup>2</sup> Formal actions generally cover any serious violation and repeat or continued violations of permit technicalities. Unsuccessful informal actions lead to formal actions. Specifically, formal actions are administrative proceedings which typically include a formal notice of violation and an order. Orders often require corrective action, reports, and payment of a penalty. Administrative "trials" may be held.

## Annual Enforcement Report Summary (Continued)

Inspection/Responses and Actions Taken  
by Branch for July 1999-September 2000



Fines Settled and Fines Collected by Branch for July 1999-September 2000

